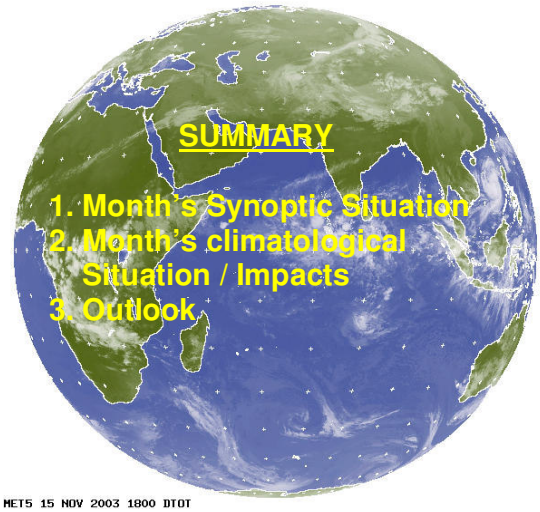
AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT
CENTRE AFRICAIN POUR LES APPLICATIONS DE LA METEOROLOGIE AU DEVELOPPEMENT

CLIMATE WATCH AFRICA BULLETIN

N° 01
JANUARY 2010



SUMMARY

5, Avenue des Ministères BP : 13184 Niamey- Niger
Tel: (227) 20 73 49 92 -- Fax: (227) 20 72 36 27 -- email: dgacmad@acmad.ne -- Web: http//www.acmad.org

HIGHLIGHTS: The estimated rainfall for January, 2010 had significant increase over Northern Africa, parts of central Africa and southern Africa countries with the highest amounts observed over northern Madagascar.

1. SYNOPTIC SITUATION DURING THE MONTH OF JANUARY, 2010

This section provides the strengths of the surface pressure systems; the 850hPa general circulation anomalies; upper troposphere thermal regimes; relative humidity; sea surface temperature (SST) and El Nino/Southern Oscillation (ENSO).

1.1 Centres of Surface Pressure Systems

The Figure 1 shows surface pressure systems as described below:

The Azores high pressure of 1019hP had a centre located over northeast Atlantic ocean at about 28°N/20°W.

The Libyan High pressure of 1017hPa weakened slightly by 1hPa.Its had a centre at about 25°N/10°E with an extended ridge over southeast Algeria and southwest Libya.

The St Helena high pressure at 1020hPa strengthened slightly by 2hPa compared to the past month and shifted its centre to the south about 34°S/05°W.

The Saharan thermal low at 1010hPa maintained its depth compared to the previous month with limited area coverage over south Chad/Central African Republic and south Sudan.

The Mascarene high pressure at 1020hPa weakened slightly by 2hPa and shifted its centre northwards. Its mean position was at 32°S/90°E.

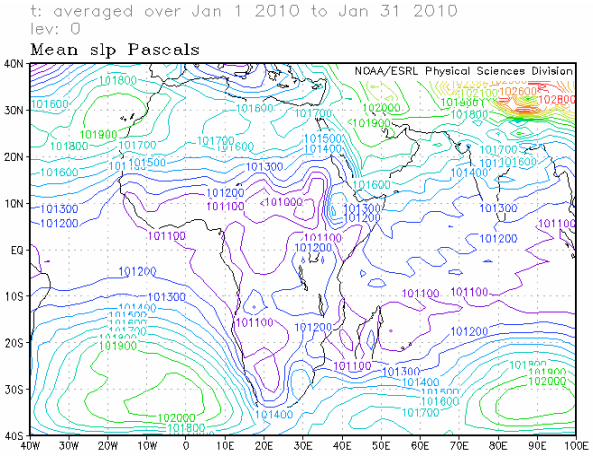


Figure 1 : Mean surface pressure during the Month of January, 2010

(Source : NOAA/NCEP)

1.2 The 850hPa wind anomaly

The Figure 2 shows wind anomalies at 850hPa derived from reference period 1971-2000.

Strong westerly wind anomalies from northern Atlantic ocean turning to southerlies over eastern Libya were observed over western part northern Africa while over the eastern part easterly winds anomalies veered to southerlies over Egypt.

Over eastern part of Equatorial Atlantic ocean, south-eastern Chad, northern Central Africa Republic and southern Sudan strong south-westerly winds anomalies were observed.

The average wind anomaly speed (shaded) was observed at about 08 m/s and above.

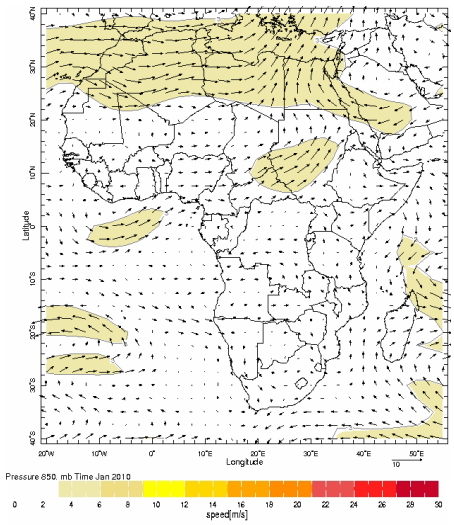


Figure 2 :January 2010, Wind Anomalies at 850hPa
(Source : IRI/NOAA/NCEP)

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1.3 Thermal index

In the
of January, 2010, the Thermal Index (TI) regime at 300hPa, Figure 3, had isotherm value of 242°K over extreme southern part of Gulf of Guinea countries, southeastern part of the Sahel, Central Africa, GHA and northern part of Southern African countries with the highest near-threshold value of 244°K over Namibia/Botswana. The high TI regimes are linked to the heavy rainfall with floods over areas characterized by high relative humidity as shown in Figure 4. The low TI regime values less or equal to 241°K were associated with suppressed convection over the rest Africa.

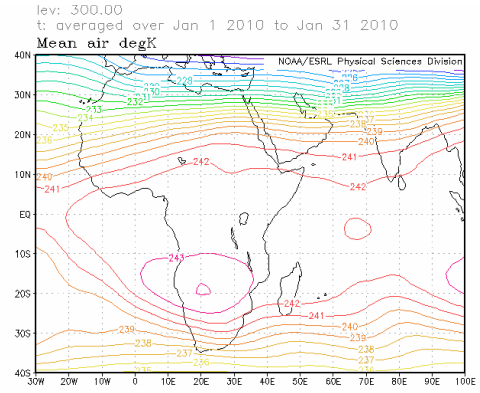

Figure 3: Thermal Regime at 300hpa (Source: NOAA/NCEP)

1.4 Relative Humidity at 850hPa

The 850hPa (Figure 4) shows high RH (>60%) in January, 2010 over extreme southern part of Gulf of Guinea countries, Central Africa, southern part of GHA countries and northern and eastern parts of Southern Africa countries. The Sahara, the Sahel, northern part of Gulf of Guinea countries and western southern Africa countries experienced dry conditions characterized by the lowest RH (40%) with lowest epicenter (< 10%) over south-western Sahel .

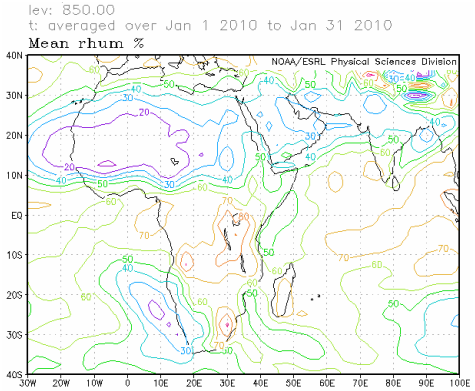

Figure 4:RH at 850 hPa (Source : NOAA/NCEP)

1.5 Sea Surface Temperature (SST) and El Nino/Southern Oscillation (ENSO)

A warming condition persisted in most of the Pacific Ocean except in the south-western, south-eastern and northern parts where some cooling conditions were observed. Neutral to warming conditions were observed in most of the Atlantic Ocean except in the north-western where some cooling conditions were observed. Neutral to warming conditions were observed in most of the Indian Ocean. In the Mozambique Channel significant warming condition prevailed.

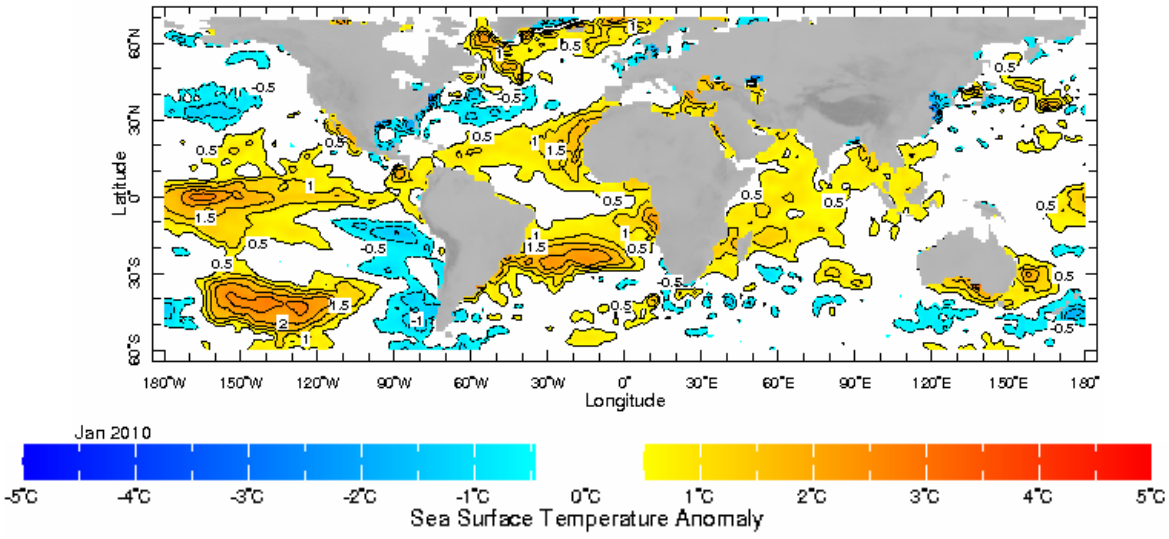

Figure 6: Sea Surface Temperature Anomalies (Source: IRI)

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2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING THE MONTH OF JANUARY

The section provides the general climatological situation covering two major parameters, the rainfall and temperature.

2.1 Rainfall

The estimated rainfall for January 2010 in Figure 6, shows some increase over Gulf of Guinea, Central Africa and Southern Africa countries while decreases were observed over GHA countries. In detail**:**

- **North Africa:** had insignificant change in distribution and amounts ranging from 10mm to 150mm with heaviest amounts of about 250mm over extreme north Morocco.
- **The Sahel**: remained dry under the influence of Harmattan characterized by dusty conditions.
- **Gulf of Guinea**: countries observed some increase in rainfall amounts ranging from 10mm to 100mm over south Liberia, Côte d'Ivoire, Ghana, Nigeria and Cameroon with maximum amounts ranging from 100mm to 300mm.
- **Central Africa**: countries had rainfall increase with amounts ranging from 10mm to 400mm with maxima ranging from 400 to 500mm over Gabon and western Democratic Republic of Congo.
- **GHA**: countries experienced rainfall distribution decrease with amounts ranging from 10mm to 200mm with peaks between 200mm to 400mm over southern Tanzania and Great Lakes countries.
- **Southern Africa:** countries had rainfall distribution and amounts increase ranging from10mm to 300mm with maxima ranging from 300mm to 400mm intensifying to about 800mm over northern Madagascar.

The January, 2010 rainfall anomalies compared to the reference period 1979-2000, Figure 7 shows rainfall deficits over Great Lakes countries, northeastern part of Southern Africa countries and southern Madagascar, while excessive rainfall was observed over northern Morocco, southeastern part of Gulf of Guinea countries, western part of central Africa countries, northwestern extending to central parts of Southern Africa countries including northern Madagascar

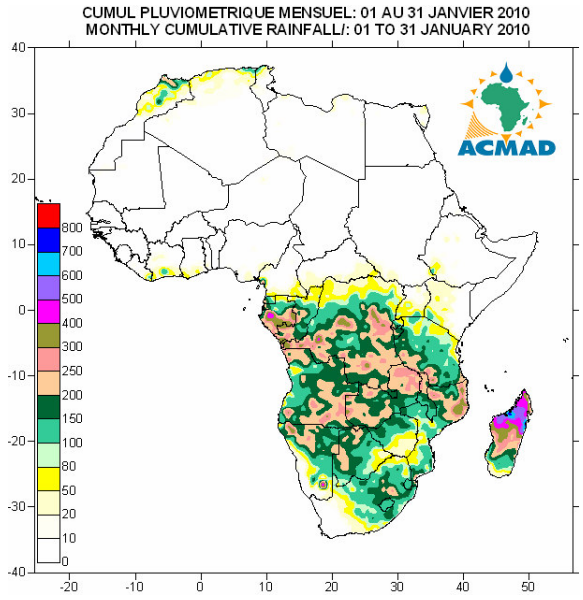

Figure6: Monthly cumulative rainfall
(Data Source: NOAA/NCEP)

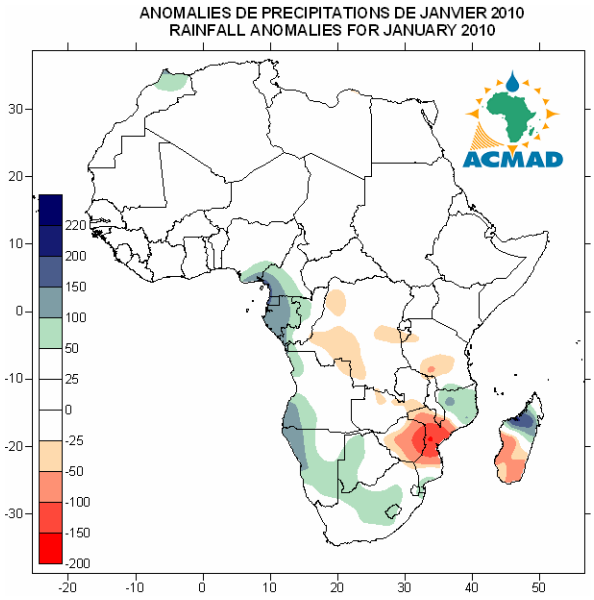

Figure7: Monthly Precipitations Anomalies
(Data Source: NOAA/NCEP)

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2.2 Surface Temperature Anomalies

In January, 2010, the temperature anomalies (Figure 8) compared to 1971-2000 base period, in most of African countries were generally positive anomalies (>1.5°C) with the highest anomalies epicenter (>3°C) over south Morocco, Mauritania, central Niger, east Libya, Egypt and North Sudan. However, negative temperatures anomalies (< -1°C) were observed over North of South Africa.

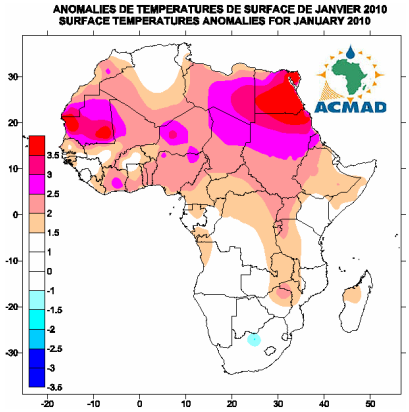

Figure 8 : Monthly Temperatures Anomalies (Data Source: NOAA/NCEP)

3. OUTLOOK

The subsections provide the expected SSTs and ENSO characteristics and evolution of events based on Figures 9 and 10 respectively with rainfall outlook.

3.1 Forecast Sea Surface Temperature (SST)

The figure 9 shows the forecast Sea Surface Temperature Anomalies from January for the period of February-March-April 2010.

- **Pacific Ocean:** warming conditions will persist over most of the ocean except over south-western, south-eastern and north-eastern parts.
- **Atlantic Ocean:** A warming condition will persist over most of Atlantic Ocean except the north-western and extreme southern parts of the ocean.
- **Indian Ocean:** warming conditions are expected to persist in most of the Indian Ocean and the Mozambique Channel.

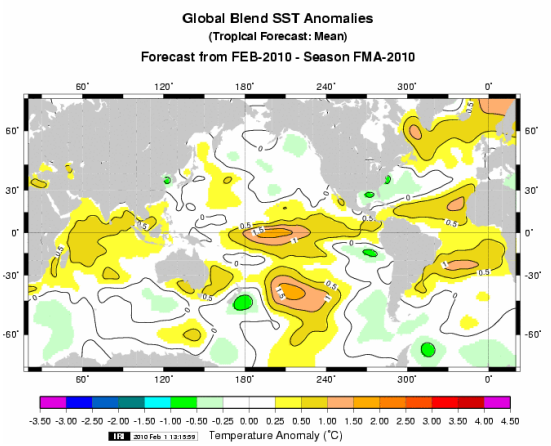

Figure9 : Forecast Sea Surface Temperatures Anomalies (source IRI)

3.2 El Ni Niño/La Niña

The set of dynamical and statistical model forecasts of ENSO over Nino 3.4 domain (5°N – 5°S, 120°W – 170°W) shown on Figure 10.

The SST observations in the NINO 3.4 region indicate moderate (+) El Nino conditions, with an area-averaged weekly anomaly of 1.7 C. Current forecasts and observations indicate a probability of about **97%** for maintaining El Nino conditions during the Jan-Mar period, and still just **over 90%** for the Feb-Apr., period.

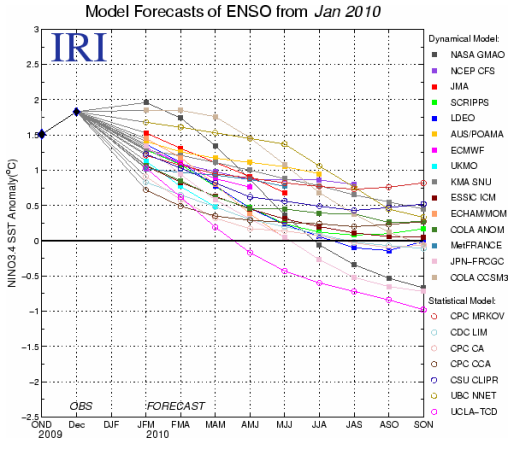

Figure 10 : Multi-model ENSO Forecast (source IRI)

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3.3 Rainfall

The prevailing high relative humidity coupled with high conditional instability manifested by TI regimes at 300hPa will maintain heavy rainfall over central Africa countries, parts of GHA countries, north-western and eastern parts of southern Africa countries:

- **North Africa countries:** will experience slight rainfall increase with amounts ranging from 10mm to 200mm with peaks of about 250mm.

- **The Sahel:** will continue to be under the influence of Harmattan characterized by dry and dust conditions.

- **Gulf of Guinea countries:** will experience rainfall increase over coastal zone recording amounts ranging from 10mm to 200mm with peaks of about 300mm.

- **Central Africa countries:** will have rainfall increase recording amounts ranging from 10mm to 400mm intensifying over southern parts to about 400mm to 600mm resulting in floods.

- **GHA countries:** will record rainfall increase over western, central and southern parts with amounts ranging from 10mm to 200mm intensifying over southern parts with amounts ranging from about 300mm to 400mm.

- **Southern Africa countries:** will experience rainfall increase with amounts ranging from 10 to 300mm intensifying over northwestern parts covering Namibia and Botswana with heavy rainfall amounts ranging from 300mm to above 600mm resulting in severe floods.

3.5 IRI seasonal Rainfall outlook issued in January 2010 for February-March-April 2010

The IRI seasonal rainfall forecast issued in January 2010 for the period of February-March-April 2010 shows:

- Below normal rainfall is expected over southern part of Gulf of Guinea countries, southern and western parts of Central Africa countries and most of Southern Africa countries.
- Excessive rainfall over Great Lakes countries.

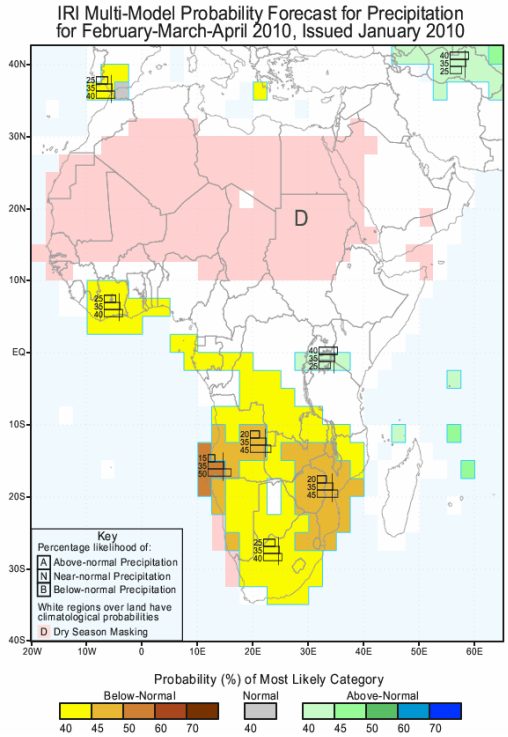

Figure 12: IRI forecast

ADVICE:

THE POTENTIAL OF ADVERSE IMPACTS IN THE REGIONS ARE CLEAR FROM THE OUTLOOK. ORGANISATIONS INVOLVED IN THE INTERVENTION SERVICES NEED TO MAINTAIN CLOSE COLLABORATION WITH NATIONAL METEOROLOGICAL SERVICES.

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